

CLAIMS

1. A pixel defect detecting and correcting apparatus which detects and corrects pixel defects in image data picked up by imaging means, comprising:

color difference and luminance calculating means which calculates the absolute values of the color differences of adjacent pixels and a defect judgment target pixel necessary for defect detection, color difference and luminance data, and data on interpolated value calculation target pixels;

maximum and minimum data values detecting means which detects the maximum and minimum values of various kinds of data based on values calculated in the color difference and luminance calculating means;

color difference interpolated value calculating means which obtains the color difference interpolated values of the defect judgment target pixel with respect to interpolated value calculation target pixels;

luminance interpolated value calculating means which obtains the luminance interpolated values of the defect judgment target pixel with respect to interpolated value calculation target pixels;

defect judgment and interpolation processing means which, using a plurality of defect detecting methods, concurrently performs defect judgment of the defect judgment target pixel

with respect to each of defect detecting methods, based on data from said maximum and minimum data values detecting means, from said color difference interpolated value calculating means and from said luminance interpolated value calculating means, and which replaces original data of pixels with interpolated values according to defect detecting methods to execute interpolation processing if the pixels have been judged to be defective; and

interpolated value for use selecting means which selects the final output value of the pixel judged to be defective obtained in said defect judgment and interpolation processing means;

wherein pixel defects are continuously detected and corrected during imaging, and pixel defects in image data are detected and corrected by combining a plurality of defect detecting methods and interpolation methods in the optimum manner.

2. A pixel defect detecting and correcting apparatus according to claim 1,

wherein with respect to defect judgment in said defect judgment and interpolation processing means, a limit is set to the defect judgment, using color difference interpolated values and luminance interpolated values for defect judgment target pixels.

3. A pixel defect detecting and correcting apparatus according to claim 1,

wherein in defect judgment and interpolation processing in said defect judgment and interpolation processing means, a plurality of defect-detecting methods and an interpolation method, which is optimized for each of the defect detecting methods to minimize deterioration in image quality even when erroneous detection is performed, are used to concurrently execute each defect detection and interpolation processing and

the final interpolated output value is decided in said interpolated value for use selecting means based on the characteristics of the defect detecting methods to select the final interpolated output value.

4. A pixel defect detecting and correcting apparatus according to claim 2,

wherein said limit can be arbitrary set from the outside.

5. A pixel defect detecting and correcting method which detects and corrects pixel defects in image data picked up by imaging means, comprising the steps of:

calculating the absolute values of the color differences of adjacent pixels and a defect judgment target pixel necessary for

defect detection, color difference and luminance data, and data on interpolated value calculation target pixels;

detecting the maximum and minimum values of various kinds of data based on values calculated in the color difference and luminance calculating step;

obtaining the color difference interpolated values of the defect judgment target pixel with respect to interpolated value calculation target pixels;

obtaining the luminance interpolated values of the defect judgment target pixel with respect to interpolated value calculation target pixels;

performing a defect judgment of the defect judgment target pixel with respect to each of the defect detecting methods concurrently, using a plurality of defect detecting methods, based on data from said maximum and minimum data values detecting step, from said color difference interpolated value calculating step and from said luminance interpolated value calculating step, and executing interpolation processing by replacing original data of pixels with interpolated values according to defect detecting methods if the pixel has been judged to be defective; and

selecting the final output values of the pixel judged to be defective which is obtained in said defect judgment and interpolation processing step;

wherein pixel defects are continuously detected and corrected during imaging, and pixel defects in image data are detected and corrected by combining a plurality of defect detecting methods and interpolation methods in the optimum manner.

6. A pixel defect detecting and correcting method according to claim 5,

wherein the order of precedence in said interpolated value for use selecting step is: color difference absolute value comparison of adjacent eight pixels, comparison of adjacent eight pixels, and comparison between the closest eight pixels.